

**U.S. PATENT APPLICATION**

**for**

***SHOE HEEL PROTECTOR***

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# SHOE HEEL PROTECTOR

## BACKGROUND OF THE INVENTION

### Field of the Invention

The present invention relates generally to a guard for the heel of a shoe. In particular, the present invention relates to a workboot with a protective material  
5 wrapped around the heel of the boot and integrated therein.

### Discussion of the Related Art

Historically, heel protection devices have been developed to maintain the  
10 appearance of shoes against damage or scuffing (e.g., a person driving a vehicle for a living) or to assist patients after foot surgery with protecting the heel against strike or reducing weight bearing from the heel of the foot.

In this regard, the devices that have been developed to maintain the  
15 appearance of shoes have primarily comprised a wrap around band of material that is removably applied to a shoe while driving. Other devices include a U-shaped frame that removably supports the heel of a shoe. All of these devices generally

include a removable piece of material that is not integrated into the shoe, wherein the material is not configured to continually support the heel of a foot.

Other devices that have been developed to protect the heel of a foot after surgery generally include post-operative surgical shoes with tapered wedges that distribute weight away from the heel of the foot. These shoes are designed for temporary use and are not constructed to withstand being used on a daily basis over a prolonged period of time. Therefore, the heel protection devices included in these surgical shoes are often not well-integrated into the layers of the soles of the shoes and provide only minimal protection against heel strike.

What is needed, therefore, is a heel protection device that withstands prolonged use and provides significant support for the heel of the foot by integrating the support into the other layers of the shoe or boot (e.g., the insole, etc.).

### SUMMARY OF THE INVENTION

It is an object of the present invention to provide a shoe heel protector including a middle portion, a first side portion and a second side portion. The semi-rigid middle portion substantially covers a rear heel portion of a shoe and is permanently attached to the shoe. The first side portion is integrally formed with the middle portion, and the first side portion partially covers a first side of the shoe. The

second side portion is integrally formed with the middle portion, and the second side portion partially covers a second side of the shoe.

It is yet another object of the present invention to provide a shoe heel protector including a middle portion, a first side portion and a second side portion. The semi-rigid middle portion substantially covers a rear heel portion of a shoe and is permanently attached to the shoe along a bottom edge of the middle portion. The first side portion is integrally formed with the middle portion and includes at least one aperture formed therein. The first side portion partially covers a first side of the shoe. The second side portion is integrally formed with the middle portion and includes at least one aperture formed therein. The second side portion partially covers a second side of the shoe. The aperture formed in the first side portion and the aperture formed in the second side portion each align with a corresponding eyelet on the front of the shoe.

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Still yet another object of the present invention is to provide a shoe heel protector including a semi-rigid middle portion, wherein the middle portion substantially covers a rear heel portion of a shoe and a bottom edge of the middle portion is secured to a welt in the shoe. A first side portion is integrally formed with the middle portion, and the first side portion partially covers a first side of the shoe. The second side portion is integrally formed with the middle portion, and the second side portion partially covers a second side of the shoe.

## BRIEF DESCRIPTION OF THE DRAWINGS

A clear understanding of the various advantages and features of the present invention, as well as the construction and operation of conventional components and mechanisms associated with the present invention, will become more readily apparent by referring to the exemplary, and therefore non-limiting, embodiments illustrated in the following drawings which accompany and form a part of this patent specification.

FIGURE 1 is a side elevational view of a workboot with a heel protection device according to the preferred embodiment of the present invention;

FIGURE 2 is an exploded view of the heel protection device and the workboot according to the preferred embodiment of the present invention;

FIGURE 3 is a bottom perspective view of a workboot with a heel protection device according to the preferred embodiment of the present invention;

FIGURE 4 is a planar view of the heel protection device according to the preferred embodiment of the present invention;

FIGURE 5 is a cross-sectional view along line 5-5 of FIGURE 1 according to the preferred embodiment of the present invention;

FIGURE 6 is a cross-sectional view along line 6-6 of FIGURE 1 with laces in the workboot according to the preferred embodiment of the present invention;

FIGURE 7 is a cross-sectional view along line 6-6 of FIGURE 1 without laces in the workboot according to the preferred embodiment of the present invention;

FIGURE 8 is a cross-sectional view along line 8-8 of FIGURE 3 according to the preferred embodiment of the present invention; and

FIGURE 9 is a cross-sectional view along line 9-9 of FIGURE 1 according to the preferred embodiment of the present invention.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGURE 1, a workboot 10 includes a semi-rigid symmetrical heel protector 12 that wraps around a top assembly 14 of boot 10. Protector 12 is  
5 integrated into the other material layers that comprise boot 10.

In addition to top assembly 14, boot 10 further includes a boot shell 16, a sole assembly 18, and a lace assembly 20. Lace assembly 20 includes conventional lace eyelets 22, a boot lace 24, and a boot tongue 26. In the preferred embodiment  
10 of the present invention, boot shell (upper) 16 and top assembly 14 are constructed with high-quality leather, and in order to reduce manufacturing costs, protector 12 forms part of shell 16 because leather is not placed underneath protector 12. Alternatively, protector 12 is placed over the leather of shell 16 and secured with standard techniques well-known by one of ordinary skill in the art (e.g., adhesive  
15 bonding, stitching, etc.).

As illustrated in FIGURES 1-2, protector 12 is stitched into sole assembly 18 along line 28. Protector 12 includes a first pair of apertures 30 and a second pair of apertures 32. Apertures 30, 32 align with eyelets 22 of boot 10 and are held in place  
20 by lace 24. In the preferred embodiment of the present invention, protector 12 is constructed from a semi-rigid material that includes a bottom portion 34, a middle portion 36 and a top portion 38. A series of ridges 40 are integrally formed with middle portion 36.

Turning to FIGURE 3, in the preferred embodiment of the present invention, a bottom edge 42 along protector 12 is secured in place by stitching or stapling through edge 42 to secure protector 12 to all of the additional layers of material that  
5   comprise boot 10.

For example, a series of stitches or staples 44 secure edge 42 of protector 12 to at least boot shell 16. Stitches 44 may additionally secure edge 42 to other layers of boot 10 comprising sole assembly 18, including an insole 46 and a midsole 48.

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#### WELTED CONSTRUCTION

As illustrated in FIGURE 3, boot 10 is preferably manufactured with a welted sole. A welted sole is constructed by stitching a piece of leather to the shoe upper  
15   lining and insole. This allows a foot to flex and permits the shoe to be resoled.

In the late Nineteenth century, a process for constructing footwear was developed by Charles Goodyear. "Goodyear welting" is a method of welting that is well-known by one of ordinary skill in the art and includes stitching on the bottom of  
20   the sole.



Goodyear welting is generally a long and expensive process whereby sole of boot 10 is stitched to a strip of leather (a "welt") which in turn is stitched to the upper part of the shoe and the inner sole. This process ensures strength, resistance to the elements, flexibility and comfort.

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As illustrated in the figures, the final boot 10 that is welted includes the outsole, the midsole, the upper and the insole all stitched together through a leather welt.

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The general process of welting includes the following steps:

1. The leather insole is trimmed to meet the requirements of the shoe being constructed.

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2. A channel is hand carved on the insole for the stitch to travel through.

3. The upper of the shoe or boot is "pulled over" and tacked down in place in preparation for welting.

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4. Using an Awl, a channel is punched through the insole, the upper and the welt to allow for the stitch to be threaded.

5. Using a curved needle, the stitch is pulled through and locked.
6. Steps 4 and 5 are repeated until the entire shoe or boot is stitched.

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At this point, there are different additional steps that may be applied. A fine light dress shoe would have a light sole bonded to the welt and a leather or cork filler and then sewn to the welt. Alternatively, a midsole will be bonded to the welt and filler and then sewn to the welt. Thereafter, an outsole can be either bonded to the midsole without stitching or can be stitched to the welt as well. The style of footwear chosen will dictate which technique is applied.

### GENERAL MANUFACTURING OF FOOTWEAR

15 There are typically four main departments connected with manufacturing within a footwear company and the components follow a progressive route through each of these departments to produce the finished shoes. The departments including: Clicking, Closing, Lasting/Making, Finishing/ Shoe Room.

20 **CLICKING/CUTTING:** In this department, upper 14 of shoe 10 is manufactured. The clicking operative is issued with a number of skins of leather, mostly from cows, although leather can be made from almost all animal skins and

with the use of metal strip knives, various shaped pieces are cut out that will eventually make up the upper. Leather will have varying amounts of flaws on the surface such as barbed wire scratches and these flaws need to be avoided, so that they are not used for the upper pieces.

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CLOSING/MACHINING: In this department, the component pieces of shoe are sewn together by highly skilled machinists to produce the completed upper. In the early stages, the pieces are sewn together on what are called flat machines. In the latter stages, the upper becomes three-dimensional and the machine used is called a post machine. This is where the sewing surface of the machine is elevated on a post to enable the operative to sew the three dimensional upper. Various edge treatments to the leather are also completed to produce a more attractive look to the finished upper. The eyelets are also inserted at this stage to accommodate the laces in the finished shoes.

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LASTING/MAKING: The completed uppers are now molded into a foot shape using a last. A last is typically a plastic shape that simulates the foot shape which, when removed from the finished shoe, can be used continually to produce more shoes. The first operation is to attach the insole to the bottom of the last, but this is only a temporary attachment to allow the last to be removed at the end of the process.

In a Goodyear welted shoe, the insole has a rib attached to its under edge. The upper is stretched and molded over the last and attached to the insole rib. When this is completed, the product is now a "lasted shoe".

5           The strip of leather (or alternatively plastic) – the welt – is sewn onto the shoe through the rib and upper and all the surplus material is trimmed off the seam. The sole is then attached to the welt and the two are stitched together. Thereafter, the heel is attached which completes the "making" of boot 10.

10           FINISHING/SHOEROOM: At this stage, it depends on which materials have been used for the welt and sole to determine how it will be finished. In the case of a leather welt, the sole edge and heel are trimmed and buffed to give them a smooth finish. They are then stained, polished and waxed to give them an attractive finish and to ensure the edge is waterproof. The bottom of the sole is often lightly buffed,  
15   stained and polished and various types of patterns are marked on the surface to give it a craft finished look. Now boot 10 is "finished" and the uppers are shoeroomed.

          In general, an internal sock is fitted into shoe which can be full, half or quarter and these will usually have the manufacturers' details or a brand name if applicable.  
20   Again, depending on the materials used for the uppers, boot 10 is cleaned, polished and sprayed, plus laces and tags are attached (such as shoe care instructions).

Boots 10 then go on to be boxed and packaged ready for dispatching to the customer.

In welted boot 10, FIGURE 4 illustrated a plan view of support 12 including  
5 upper portion 38, middle portion 36 and bottom portion 34. Aligned with the heel, semi-rigid upper portion 38 forms a convex portion 46 to fully support the heel. Apertures 30 and 32 further secure support 12 to upper assembly 14.

As illustrated in FIGURES 6-7, protector 12 is further secured to boot 10 with  
10 lace 22 inserted through eyelet 22 and aperture 30. When lace 22 is not pulled through eyelet 22 and aperture 30 (FIG. 7), protector 12 is not held adjacent to boot shell 16.

FIGURES 8-9 further illustrate the welted construction described above in  
15 relation to boot 10. In particular, a welt 50 that is approximately 60cm long, 2cm wide and 3mm thick is stitched to insole 46 and midsole 48 using a first stitch 52, and welt 50 is also stitched to an outsole 54 using a second stitch 56. A filler layer 58 manufactured from polyurethane or EVA foam is cemented to outsole 56. Outsole 56 is manufactured from a carbon rubber compound.

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The scope of the application is not to be limited by the description of the preferred embodiments described above, but is to be limited solely by the scope of

the claims that follow. For example, instead of boot 10 being manufactured as a welted boot, boot 10 may be constructed primarily by cementing or stapling the portions of sole assembly 18 together without the use of a welt or boot 10 may be constructed primarily by cementing or stapling portions of the sole assembly  
5 directing to the welt (without stitching the sole to the welt) without departing from the scope of the preferred embodiment of the present invention.